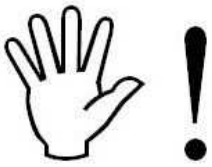
Instruction Manual

P/N 30-3812
Ford Coyote 5.0L V8
with Ford Racing Controls Pack
Plug & Play Adapter Harness



STOP!

THIS PRODUCT HAS LEGAL RESTRICTIONS.
READ THIS BEFORE INSTALLING/USING!

THIS PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION. (VISIT THE "EMISSIONS" PAGE AT HTTP://WWW.SEMASAN.COM/EMISSIONS FOR STATE BY STATE DETAILS.)

IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IF THIS PRODUCT WAS PURCHASED IN ERROR, DO NOT INSTALL AND/OR USE IT. THE PURCHASER MUST ARRANGE TO RETURN THE PRODUCT FOR A FULL REFUND.

THIS POLICY ONLY APPLIES TO INSTALLERS AND/OR USERS WHO ARE LOCATED IN THE UNITED STATES; HOWEVER CUSTOMERS WHO RESIDE IN OTHER COUNTRIES SHOULD ACT IN ACCORDANCE WITH THEIR LOCAL LAWS AND REGULATIONS.

WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! The AEM Infinity Programmable EMS allows for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to an AEM-trained tuning shop or call 800-423-0046 for technical assistance.

NOTE: All supplied AEM calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM IF THE CALIBRATION IS SAFE FOR ITS INTENDED USE. AEM holds no responsibility for any engine damage that results from the misuse or mistuning of this product!

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Instruction Part Number: 10-3812
Document Build 7/31/2015

OVERVIEW

The 30-3812 AEM Infinity Adapter Kit was designed to interface the Ford Coyote 5.0L Engine wiring harness and the Ford Racing Control Pack – 5.0L 4V TI-VCT Manual Transmission. This is a true standalone system that eliminates the use of the Ford Racing ECU. The use of this adapter makes the kit “plug and play” so no cutting or splicing wires is necessary. The base configuration files available for the Infinity EMS are starting points only and will need to be modified for every specific application.

The available Infinity EMS part numbers for this adapter kit are:

- 30-7101 INFINITY-8
- 30-7100 INFINITY-10

Please read this document in its entirety before attempting to start or run an engine.

GETTING STARTED

Refer to the **10-7100 for EMS 30-7100 Infinity Quick Start Guide** for additional information on getting the engine started with the Infinity EMS. The Ford Coyote V8 base session is located in C:\Documents \AEM\Infinity Tuner\Sessions\Base Sessions.

Application

Ford Racing 5.0L 4V TI-VCT Mustang Crate Engine Ford Racing P/N M-6007-M50
Ford Racing Controls Pack – 5.0L 4V TI-VCT Manual Transmission Ford Racing P/N M-6017-A504V

Important Application Notes

Before installing the 30-3812 Adapter Kit it is suggested to completely install the Ford Racing Control Pack as per the Ford Racing supplied instructions.

The Infinity Adapter Harness included in the 30-3812 kit includes Intake Air Temperature (Infinity C1-67) wired to both the AUX connector and the Ford Racing MAF connector. Only one of these signals can be connected to the Infinity at a time. If the AUX connector input is used either de-pin or disconnect the Ford Racing MAF signal wire or connector.

The coils used for testing were factory two-wire ignition coils (Motorcraft P/N BR3Z-12029-A). This adapter harness kit includes two AEM 4 Channel Coil Drivers (AEM P/N 30-2840) required to drive these coils.

The Ford Racing Controls Pack wiring harness includes connectors for factory LSU 4.9 Wideband Oxygen sensors, which the Infinity EMS does not currently support. Included with this kit are two LSU 4.9 to LSU 4.2 adapter harnesses. These harnesses allow the existing Ford Racing harness to interface with AEM LSU 4.2 Wideband Oxygen sensors (p/n 30-2001, sold separately) to be controlled by the Infinity EMS.

The Ford Racing Control Pack powers the fuel pump relay any time 12v is supplied to the ‘Ignition Switch Position’ wire. A modification can be made to the Ford Racing wiring harness to allow the Infinity EMS to control the fuel pump and is provided in the "Fuel Pump Modification" section of this document.

The Ford Racing Controls Pack includes a Power Distribution Box containing relays for A/C, PCM, Intercooler, Fuel Pump, Start, and Fan. With the fuel pump relay modification mention above, the Infinity EMS will control all of these relays with the exception of the A/C relay, which is not wired into the Ford Racing harness.

The base configuration file provided for the Coyote application was created with the use of the Ford Racing Mustang Boss 302 Alternator Kit (P/N M-8600-M50BALT). The calibration has Lowside 0 duty and frequency tables setup to charge at ~14.7 volts. See "Alternator Control" section for more information on controlling the charging system.

The base calibration provided was created without the use of the Ford Racing Controls Pack air box, inlet tube, or MAF sensor. The Factory MAF sensor is not currently supported by the Infinity EMS for airflow calculations; however the Air Temperature sensor within the MAF has been characterized and may be utilized.

The Infinity EMS requires a MAP sensor for airflow calculations. A custom adapter was fabricated to replace the PCV inlet pipe into the passenger side of the throttle body assembly. A vacuum line from this adapter to a MAP sensor was utilized. The MAP sensor will need to be wired into the proved 12-pin AUX plug.

The base calibration utilizes the Clutch Position (Neutral Switch) flying lead on the Ford Racing wiring harness as an input into the Infinity EMS. Once grounded, the Infinity EMS provides the ground for the Starter Relay control circuit. If the user wishes not to provide a ground to this flying lead, follow the steps provided in the "Clutch Position Switch" section to modify the LS8_Duty [%] table values to allow the starter to be engaged without a clutch signal.

The factory Cylinder Head Temperature sensor, Intake Air Temperature sensor, and fuel injector have been fully characterized and their calibrations are utilized in the base calibration.

DOWNLOADABLE FILES

Files can be downloaded from www.aeminfinity.com. An experienced tuner must be available to configure and manipulate the data before driving can commence. The Quick Start Guide and Full Manual describe the steps for logging in and registering at www.aeminfinity.com. These documents are available for download here: **http://www.aemelectronics.com/products/support**

Kit Contents

AEM P/N	Description	Qty
36-3812	Harness, Infinity Coyote Adapter	1
36-3812-00	Harness, UEGO LSU4.2 to LSU4.9 Adapter	2
35-2840	Ignitor, 4-Channel with Thermal Paste	2
4-1009	Dust Cap, Flash Enable and Fuel Pump	2
4-1010	Jumper, Flash Enable	1
4-1008	Connector, DTM06-12SA Plugged	1
1062-20-0122	Socket, DTM Size 20	14
35-3014	Cable, USB Comms 9.8'	1
10-3812	Instruction Sheet, 30-3812	1

OPTIONS

30-2001 UEGO Wideband O2 Sensor
Bosch LSU4.2 Wideband O2 Sensor that connects to AEM 30-3600 UEGO Wideband O2 Sensor Extension Harness

30-3602 IP67 Logging Cable
USB A-to-A extension cable: 39” long with right angled connector and bayonet style lock

INFINITY CONNECTORS

The AEM Infinity EMS uses the MX123 Sealed Connection System from Molex. AEM strongly recommends that users become familiar with the proper tools and procedures for working with these high density connectors before attempting any modifications. The entire Molex MX123 User Manual can be downloaded direct from Molex at:

http://www.molex.com/mx_upload/family//MX123UserManual.pdf

INFINITY ADAPTER HARNESS

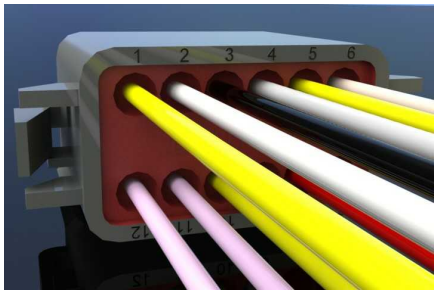
Included with the Ford Coyote 5.0L PNP to Ford Racing Control Pack kit is an Infinity adapter harness. This is used to make the connection between the AEM Infinity EMS and both the Ford Engine harness and Ford Racing Control Pack harness plug and play. This is depicted below with the two Infinity connectors and the Ford header. There are also a few other integrated connectors within this harness described below.

There are two AEM 4 Channel Coil Drivers included with this kit. Each must be connected to the adapter harness with one 4P and one 5P connector. Ensure that the 4P and 5P connectors marked “Coil 1” connect to opposite ends of the *same* 4 Channel Coil Driver. Similarly, the 4P and 5P connectors marked “Coil 2” should also be connected to opposite ends of the second AEM 4 Channel Coil Driver.

The grey Deutsch 2P DTM “Flash” connector is used for secondary hardware flashing. The included shunt connector jumps the 2 wires together. Once initially flashed, the EMS is normally upgraded in the software, not requiring this connector.

The grey Deutsch 2P DTM “Fuel Pump” connector is used for an optional user modification discussed in the "Fuel Pump Modification" section allowing the Infinity EMS to control the Ford Racing harness Fuel Pump relay.

The grey Deutsch 12P DTM “AUX” connector is used to adapt many common ancillary inputs and outputs easily. Included in the kit are a DTM 12P mating connector, 12 DTM terminals, and a DTM 12P wedgelock. If used, these components will need to be terminated by the installer or end user with 16-22awg wire (not included). Note: the pin numbering is molded into the connector, as shown. **See Page 28 for pinout.**



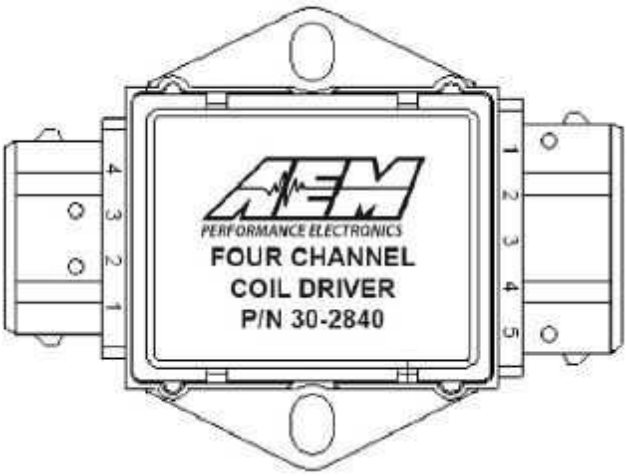
WIDEBAND/UEGO SENSOR ADAPTER HARNESS

Included with the AEM Infinity EMS PNP adapter harness kit are two LSU4.9 to LSU4.2 adapter harnesses. These are used to make the connection between the Ford Racing Control Pack harness and LSU4.2 Wideband 02 sensors (AEM P/N 30-2001).

NOTE: The AEM Infinity EMS is compatible ONLY with Bosch LSU4.2 sensors. These adapters are supplied to ease installation and minimize the need to modify wiring. An AEM Infinity EMS should never be plugged in and turned on with Bosch LSU4.9 (original Ford Coyote sensors) connected. It is imperative that the original Ford O2 sensors are unplugged from the wiring harness before connecting the AEM Infinity EMS.

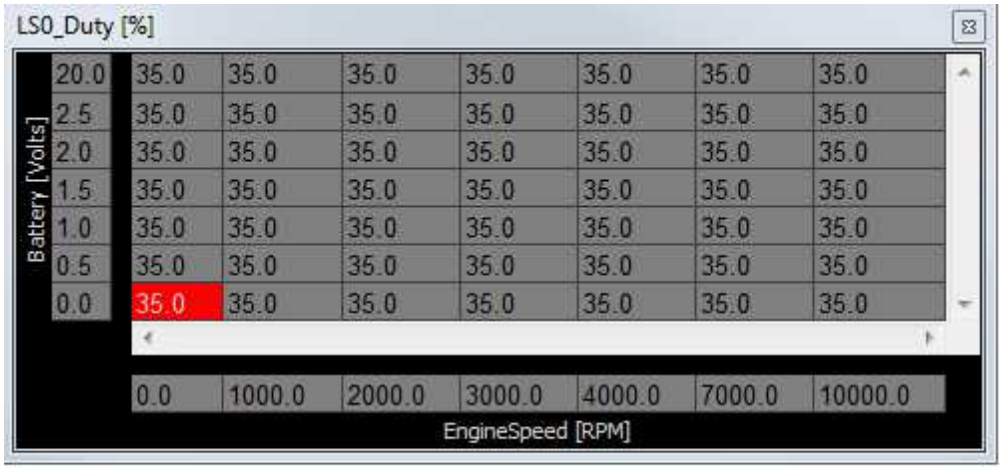
4-Channel Ignitors

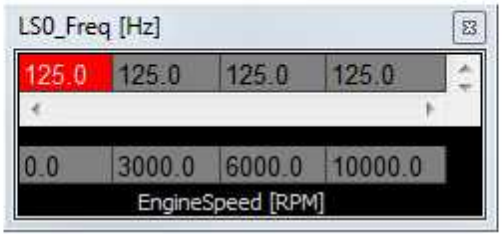
It is critical that this driver module be mounted to a flat metallic surface and that the supplied thermal grease applied between the module and its mounting surface. This is required to allow the heat generated to be conducted away. Failure to mount the driver in this manner will cause a premature failure and will void the warranty.



Alternator Control

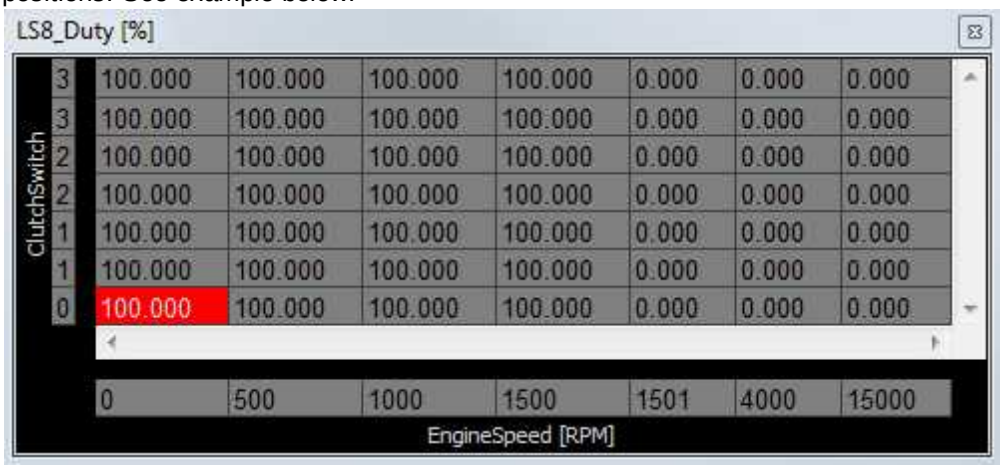
The Ford Mustang Boss 302 Alternator is controlled by a fixed frequency and a duty percentage that controls the charge set point. The base session sets LS0_Duty to 35 % which correlates to ~14.7v charge. Decreasing the LS0_Duty percentage will increase the battery set point (higher voltage), and increasing the duty percentage will decrease the battery set point (lower voltage).





Clutch Position Switch

The base session will not provide a ground for the Starter Relay control circuit unless a ground is provided to the Clutch Position (Neutral Switch) flying lead on the Ford Racing wiring harness. This requirement can be modified through setting the LS8_Duty [%] table to 100% at all ClutchSwitch positions. See example below:

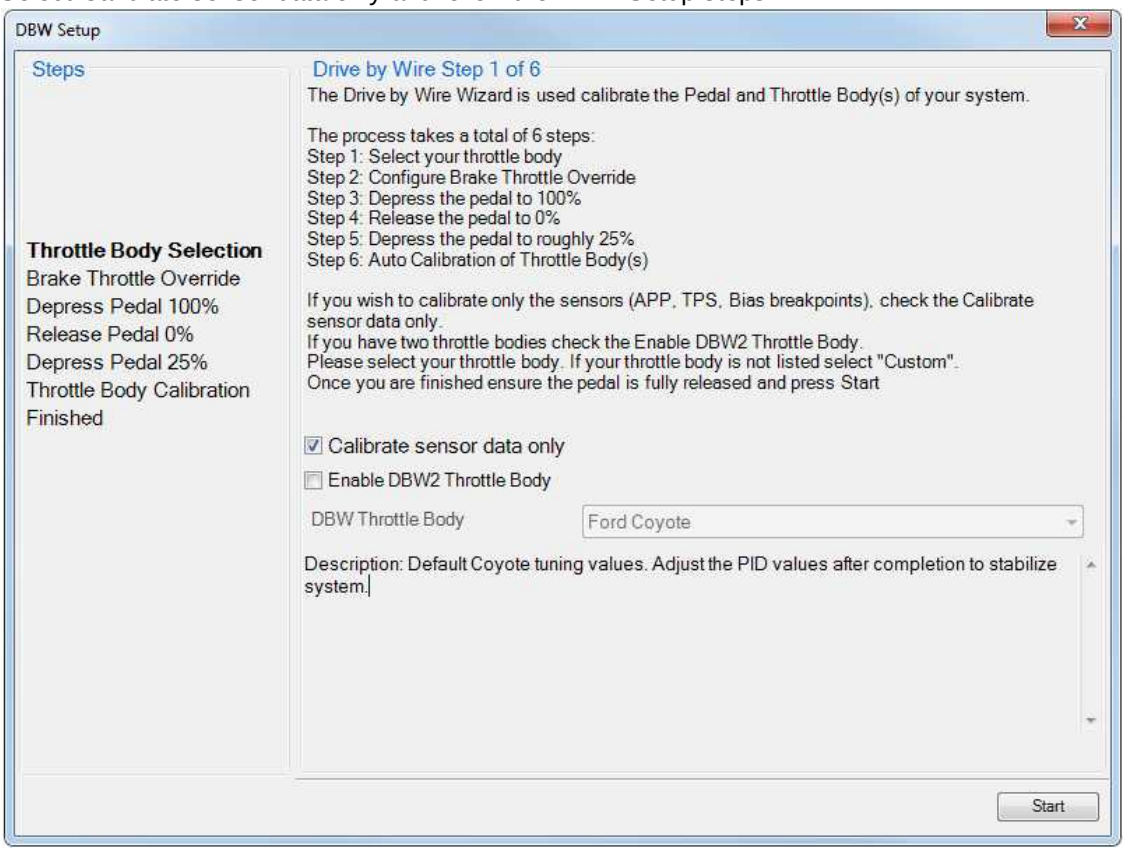


The base session sets the input for the 'ClutchSwitch' 1D table channel to Analog20, which is pulled up to 5 volts. The pinout provided in this manual suggests wiring the Clutch Position flying lead to Analog20. When a ground is provided this drops Analog20's voltage from 5 volts to 0 volts, this transition in voltage sets the ClutchSwitch channel to 0 (5 volts) or 1 (0 volts).

Drive By Wire

The base calibration will set most of the Drive-By-Wire (DBW) channels for the stock 5.0L Coyote throttle body. If a different throttle body is used, Supra Cobra or Cobra Jet, then further adjustments to the DBW channels may be required. To complete the DBW setup the Drive By Wire Wizard must be ran.

Select Calibrate sensor data only and follow the DBW Setup steps.



Note: There are a few integrated DBW fail safes incorporated into the Infinity system. For instance, if the accelerator pedal and throttle position sensors do not track each other, or if the maximum DBW current is exceeded, there will be a fatal error which will kill the engine for safety purposes. This error will reset when the ignition key is turned off momentarily, and then turned back on.

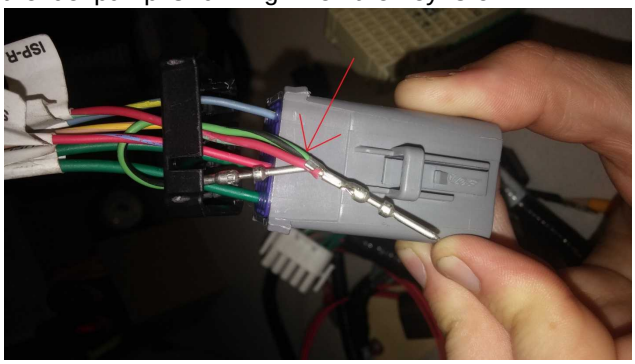
Variable Valve Control (VVC)

The AEM Infinity system supports Fords Coyote's Variable Valve Control. The base calibration is configured with base VVC settings that may need adjustment.

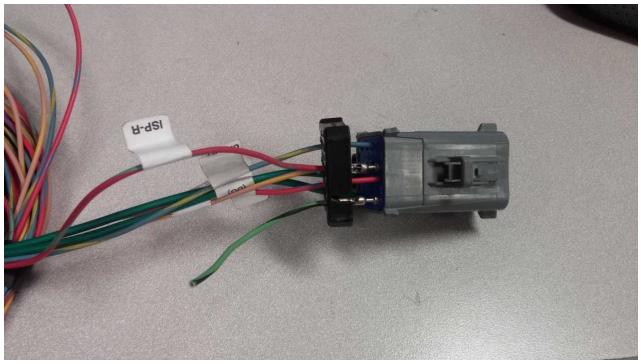
For proper VVC function, the user must sync the cam timing by following the instructions listed in Setup Wizard: Wizards>Setup Wizard>VVC>VVC Cam Sync. Once the cam sync has been verified for all four cams, variable valve control may be enabled by checking the boxes next to each camshaft in the VVC Enable section of the Wizard.

Ford Racing Control Pack Harness Fuel Pump Modification (Optional):

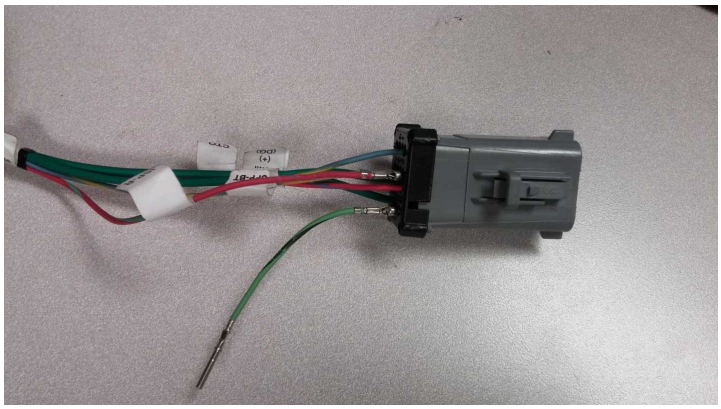
To allow the Infinity to control the fuel pump a modification must be made to the C47 flying lead connector. The Green w/ Black stripe wire is the Highside Fuel Pump relay control wire (C47-01). The Ford Racing harness double crimps 12v Start & Run (C47-03 ISP-R) to this fuel pump highside so that the fuel pump is running when the key is on.



The Green w/ Black stripe wire needs to be cut off of this double crimp.



Reinstall the Green w/ Black stripe wire's pre-existing pin back into the C47-01 socket. Route a wire that connects the Green w/ Black stripe wire to the adapter harness connector labeled "Fuel Pump". Extra crimp terminals are provided to adapt this wire to the Deutsch DTM connector on the adapter harness.



PINOUTS

Infinity Pinout

Dedicated	Dedicated and not reconfigurable
Assigned	Assigned but reconfigurable
Available	Available for user setup
Not Applicable	Not used in this configuration
Required	Required for proper function

Infinity Pin	Infinity Assignment	Pin Destination	Ford Coyote with FR Control Pack Description	Infinity Hardware Specification	Notes
C1-1	LowsideSwitch_4	Ford Racing PCM70 - 51	Intercooler Pump Relay Control (SCICP PCM signal)	Lowside switch, 4A max, NO internal flyback diode.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS4_Duty [%]" for activation settings.
C1-2	LowsideSwitch_5	Engine E - 16	Variable Camshaft Timing 21 Solenoid (Driverside Intake)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS5_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
C1-3	LowsideSwitch_6	Engine E - 56	Variable Camshaft Timing 12 Solenoid (Passengerside Exhaust)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS6_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
C1-4	UEGO 1 Heat	Ford Racing PCM50 - 24	UEGO 1 Heat	Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C1-5	UEGO 1 IA	Ford Racing PCM50 - 29	UEGO 1 IA		Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
C1-6	UEGO 1 IP	Ford Racing PCM50 - 17	UEGO 1 IP		Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
C1-7	UEGO 1 UN	Ford Racing PCM50 - 4	UEGO 1 UN		Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
C1-8	UEGO 1 VM	Ford Racing PCM50 - 15	UEGO 1 VM		Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C1-9	Flash_Enable	2P "Flash Enable" - 2	Flash Enable	10K pulldown	Not usually needed for automatic firmware updates through Infinity Tuner. If connection errors occur during update, connect 12 volts to this pin before proceeding with

					upgrade. Disconnect the 12 volts signal after the update.
C1-10	+12V_R8C_CPU	Ford Racing PCM70 - 62 and 2P "Flash Enable" - 1	KAPWR / 12VHAAT	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65).
C1-11	Coil 4	5P "Coil Driver 1" - 5	Coil on Plug Assembly 4 (COP-D)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-12	Coil 3	5P "Coil Driver 1" - 4	Coil on Plug Assembly 3 (COP3F)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-13	Coil 2	5P "Coil Driver 1" - 2	Coil on Plug Assembly 2 (COP2H)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-14	Coil 1	5P "Coil Driver 1" - 1	Coil on Plug Assembly 1 (COP1A)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-15	Coil 6	5P "Coil Driver 2" - 2	Coil on Plug Assembly 6 (COP6E)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-16	Coil 5	5P "Coil Driver 2" - 1	Coil on Plug Assembly 5 (COP5B)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-17	LowsideSwitch_ 2	Ford Racing PCM70 - 18	Fan Relay Control	Lowside switch, 4A max, NO internal flyback diode.	See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS5_Duty [%]" for activation settings. See Setup Wizard page 'User GPOs' for default activation criteria.
C1-18	LowsideSwitch_ 3	Engine E - 2	Variable Camshaft Timing 11 Solenoid (Passengerside Intake)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS3_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
C1-19	AGND_1	Ford Racing PCM70 - 2 and AUX - 3	IAT and AUX Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C1-20	AGND_1	Engine E - 32	Digital Cams Ground (E-SIGRTN)	Dedicated analog ground	Analog 0-5V sensor ground
C1-21	Crankshaft Position Sensor Hall	---	Crankshaft Position Sensor Hall	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Cam/Crank' for options.
C1-22	Camshaft Position Sensor 1 Hall	Engine E - 41	Camshaft Position Bank 1 (Passenger Intake) (CMP11)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Cam/Crank' for options.

C1-23	Digital_In_2	Engine E-42	Camshaft Position Bank 2 (Driverside Intake) (CMP21)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Cam/Crank' for options.
C1-24	Digital_In_3	---	Turbo Speed Hz	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Turbo Speed' for calibration constant. TurboSpeed [RPM] = Turbo [Hz] * Turbo Speed Calibration.
C1-25	Digital_In_4	---	Vehicle Speed Sensor	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Vehicle Speed' for calibration constant.
C1-26	Digital_In_5	AUX - 6	Flex Fuel	10K pullup to 12V. Will work with ground or floating switches.	See channel FlexDigitalIn [Hz] for raw frequency input data.
C1-27	Knock Sensor 1	Engine E - 7	Knock Sensor+ [KS1+]	Dedicated knock signal processor	See Setup Wizard page 'Knock Setup' for options.
C1-28	Knock Sensor 2	Engine E - 45	Knock Sensor+ [KS2+]	Dedicated knock signal processor	See Setup Wizard page 'Knock Setup' for options.
C1-29	+12V_Relay_Control	Ford Racing PCM70 - 38	PCM Relay control	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
C1-30	Power Ground	---	Shield Drain	Power Ground	Connect directly to battery ground
C1-31	CANL_Aout	Ford Racing PCM70 - 58	AEMNet CANL	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-32	CANH_Aout	Ford Racing PCM70 - 59	AEMNet CANH	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-33	LowsideSwitch_1	AUX - 7	Boost Control	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS1_Duty [%]" for activation settings. See Setup Wizard page 'Boost Control' for options. Monitor BoostControl [%] channel for output state.
C1-34	LowsideSwitch_0	Ford Racing PCM70 - 53	GENRC	Lowside switch, 4A max, NO internal flyback diode.	See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS0_Duty [%]" for activation.
C1-35	Analog_In_7	Engine E - 39	DBW Negative Slope (TP1)	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Set Throttle Range page for automatic min/max calibration. Monitor the Throttle [%] channel. Also DB1_TPSA [%] for DBW applications.
C1-36	Analog_In_8	AUX - 5	MAP Sensor	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Set

					Manifold Pressure page for setup and calibration. Monitor the MAP [kPa] channel.
C1-37	Analog_In_9	AUX - 1	Fuel Pressure	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Fuel Pressure page for setup and calibration. Monitor the FuelPressure [psig] channel.
C1-38	Analog_In_10	---	Baro Sensor	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Barometric Pressure page for setup and calibration. Monitor the BaroPress [kPa] channel.
C1-39	Analog_In_11	---	Shift Switch Input	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the 1D lookup table 'ShiftSwitch' for setup. Also assignable to multiple functions. See Setup Wizard for details.
C1-40	Analog_In_12	---	Mode Switch	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the 1D lookup table 'ModeSwitch' for input state. A multi-position rotary switch such as AEM P/N 30-2056 is recommended. Also assignable to multiple functions. See Setup Wizard for details.
C1-41	+5V_Out_1	Engine E - 9	'Electronic Throttle Control (ETCREF)	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-42	+5V_Out_1	AUX - 4	+5V Out	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-43	HighsideSwitch_1	AUX - 9	HS1 (switched 12V)	0.7A max, High Side Solid State Relay	See Setup Wizard page 'HighSide Assigment Tables' for configuration options. See 2D lookup table 'HS1_Table' for activation settings.
C1-44	HighsideSwitch_0	---	VTEC	0.7A max, High Side Solid State Relay	See Setup Wizard page 'HighSide Assigment Tables' for configuration options. See 2D lookup table 'HS0_Table' for activation settings. See Setup Wizard page 'Honda VTEC' for default activation criteria.

C1-45	Crankshaft Position Sensor VR+	Engine E-13	Crankshaft Position (CKP+)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
C1-46	Crankshaft Position Sensor VR-	Engine E-12	Crankshaft Position Sensor (CKP-)		
C1-47	Camshaft Position Sensor 1 VR-	Engine E-29	VR Reluctance Sensor (VRSRTN)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
C1-48	Camshaft Position Sensor 1 VR+	Engine E-46	Camshaft Position Bank 1 In (Passengerside Exhaust) (CMP12)		
C1-49	VR+_In_2	Engine E-47	Camshaft Position Bank 2 In (Driverside Exhaust) (CMP22)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
C1-50	VR-_In_2	Engine E-48	Variable Reluctance Sensor (VRSRTN2)		
C1-51	VR-_In_3	---	Driven Left Wheel Speed Sensor -	Differential Variable Reluctance Zero Cross Detection	See 'Driven Wheel Speed Calibration' in the Setup Wizard 'Vehicle Speed' page.
C1-52	VR+_In_3	---	Driven Left Wheel Speed Sensor +		
C1-53	DBW1 Motor -	Engine E-67	Throttle Actuator Control Motor (TACM-)	5.0A max Throttle Control Hbridge Drive	+12V to close
C1-54	DBW1 Motor +	Engine E-68	Throttle Actuator Control Motor (TACM +)	5.0A max Throttle Control Hbridge Drive	+12V to open
C1-55	Power Ground	Engine E-11	Crankshaft Position Sensor Shield (SHDRTN)	Power Ground	Connect directly to battery ground
C1-56	Injector 6	Engine E-64	Fuel Injector Driver 6 (INJ6)	Saturated or peak and hold, 3A max continuous	Injector 6
C1-57	Injector 5	Engine E-63	Fuel Injector Driver 5 (INJ5)	Saturated or peak and hold, 3A max continuous	Injector 5
C1-58	Injector 4	Engine E-62	Fuel Injector Driver 4 (INJ4)	Saturated or peak and hold, 3A max continuous	Injector 4
C1-59	Injector 3	Engine E-55	Fuel Injector Driver 3 (INJ3)	Saturated or peak and hold, 3A max continuous	Injector 3
C1-60	Power Ground	Ford Racing PCM70 - 69	PWR Ground	Power Ground	Connect directly to battery ground
C1-61	+12V	Ford Racing PCM70 - 21 & Engine E-36	Injector and Digital Cam Sensor +12V Power	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
C1-62	Injector 2	Engine E-54	Fuel Injector Driver 2 (INJ2)	Saturated or peak and hold, 3A max continuous	Injector 2
C1-63	Injector 1	Engine	Fuel Injector Driver 1	Saturated or peak and	Injector 1

		E - 53	(INJ1)	hold, 3A max continuous	
C1-64	+12V	Ford Racing PCM70 - 67 and AUX - 8	+12V In	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal pin C1-29 above.
C1-65	+12V_SW	Ford Racing PCM70 - 42	12V Start & Run (ISP-R) Blunt Lead	10K pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-66	Analog_In_Temp_1	Engine E - 30	Cylinder Head Temperature (CHT)	12 bit A/D, 2.49K pullup to 5V	See 'Coolant Temperature' Setup Wizard for selection.
C1-67	Analog_In_Temp_2	Ford Racing PCM70 - 47 and AUX -2	Intake Air Temperature	12 bit A/D, 2.49K pullup to 5V	See 'Air Temperature' Setup Wizard for selection.
C1-68	Analog_In_Temp_3	---	Oil Temperature Sensor	12 bit A/D, 2.49K pullup to 5V	See 'Oil Temperature' Setup Wizard for selection.
C1-69	Stepper_2A	---	Stepper 2A	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. See Setup Wizard page 'Idle - Show Advanced Setup' for options.
C1-70	Stepper_1A	---	Stepper 1A	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. See Setup Wizard page 'Idle - Show Advanced Setup' for options.
C1-71	Stepper_2B	---	Stepper 2B	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. See Setup Wizard page 'Idle - Show Advanced Setup' for options.
C1-72	Stepper_1B	---	Stepper 1B	Automotive, Programmable Stepper Driver, up to 28V and ±1.4A	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only. See Setup Wizard page 'Idle - Show Advanced Setup' for options.
C1-73	Power Ground	Ford Racing PCM70 - 70	PWR Ground	Power Ground	Connect directly to battery ground
C2-1	DBW2 Motor +	--	DBW Motor Control Open	5.0A max Throttle Control Hbridge Drive	+12V to open
C2-2	DBW2 Motor -	--	DBW Motor Control Close	5.0A max Throttle Control Hbridge Drive	+12V to close
C2-3	Power Ground	--	Ground	Power Ground	Connect directly to battery ground

C2-4	Injector 7	Engine E-65	Fuel Injector Driver 7 (INJ7)	Saturated or peak and hold, 3A max continuous	Injector 7
C2-5	Injector 8	Engine E-66	Fuel Injector Driver 8 (INJ8)	Saturated or peak and hold, 3A max continuous	Injector 8
C2-6	Injector 9	---	Injector 9	Saturated or peak and hold, 3A max continuous	Injector 9
C2-7	Injector 10	---	Injector 10	Saturated or peak and hold, 3A max continuous	Injector 10
C2-8	Power Ground	Ford Racing PCM70 - 50	Case Ground	Power Ground	Connect directly to battery ground
C2-9	+12V	Ford Racing PCM70 - 68	VPWR	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
C2-10	Injector 11	---	Injector 11	Saturated or peak and hold, 3A max continuous	Not used
C2-11	Injector 12	---	Injector 12	Saturated or peak and hold, 3A max continuous	Not used
C2-12	Analog_In_17	AUX - 10	Mode Switch Input	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard 'Input Functions' page for input selection. See AC_Request_In 1-axis table for activation logic.
C2-13	Analog_In_18	Ford Racing PCM70 - 28	DBW_APP1 [%]	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-14	Analog_In_19	Ford Racing PCM70 - 29	DBW_APP2 [%]	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-15	Analog_In_Temp_4	---	Charge Out Temperature	12 bit A/D, 2.49K pullup to 5V	See ChargeOutTemp [C] table for calibration data and ChargeOutTemp [C] for channel data.
C2-16	Analog_In_Temp_5	---	Airbox Temperature	12 bit A/D, 2.49K pullup to 5V	See AirboxTemp [C] table for calibration data and AirboxTemp [C] for channel data.
C2-17	Analog_In_Temp_6	---	Fuel Temperature	12 bit A/D, 2.49K pullup to 5V	See FuelTemp [C] table for calibration data and FuelTemp [C] for channel data.
C2-18	Analog_In_13	AUX - 11	Oil Pressure	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard 'Oil Pressure'

					page for setup options. See OilPressure [psig] for channel data.
C2-19	Analog_In_14	AUX - 12	Traction Control Mode / Sensitivity	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the TC_SlipTrgtTrim [MPH] 1-axis table. A multi-position rotary switch such as AEM P/N 30-2056 is recommended.
C2-20	Analog_In_15	---	Exhaust Back Pressure	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard 'Exhaust Pressure' page for setup options. See EBPress [kPa] for channel data.
C2-21	Analog_In_16	Engine E - 10	Throttle Position # Positive Slope (TP2)	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C2-22	+5V_Out_2	Ford Racing PCM70 - 45	APPVREF (1)	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-23	+5V_Out_2	Ford Racing PCM70 - 61	APPVREF (2)	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-24	+5V_Out_2	---	+5V Out	Regulated, fused +5V supply for sensor power	Analog sensor power
C2-25	VR+_In_5	---	Driven Right Wheel Speed Sensor +	Differential Variable Reluctance Zero Cross Detection	See Driven Wheel Speed Calibration in the Setup Wizard 'Vehicle Speed' page.
C2-26	VR-_In_5	---	Driven Right Wheel Speed Sensor -		
C2-27	VR-_In_4	---	Non Driven Right Wheel Speed Sensor -	Differential Variable Reluctance Zero Cross Detection	See Non Driven Wheel Speed Calibration in the Setup Wizard 'Vehicle Speed' page.
C2-28	VR+_In_4	---	Non Driven Right Wheel Speed Sensor +		
C2-29	LowsideSwitch_ 9	Ford Racing PCM70 - 10	Tacho (CTO) Blunt Lead	Lowside switch, 4A max with internal flyback diode, 2.2K 12V pullup. Inductive load should NOT have full time power.	See Setup Wizard page 'Tacho' for configuration options.
C2-30	AGND_2	Engine E - 8	DBW Ground (ETCRTN)	Dedicated analog ground	Analog 0-5V sensor ground
C2-31	AGND_2	Engine E - 6 & Engine E - 44	Knock Sensor 1 & 2 Ground [KS1 - & KS2 -]	Dedicated analog ground	Analog 0-5V sensor ground

C2-32	AGND_2	Ford Racing PCM70 - 44 & PCM70 - 60	APP Sensor 1 & 2 Ground APPRTN (1) & (2)	Dedicated analog ground	Analog 0-5V sensor ground
C2-33	Analog_In_20	Ford Racing PCM50 - 19	Clutch Position (Neutral Switch) Blunt Lead	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. 'See ClutchSwitch 1-axis table for setup options. Input can be assigned to different pins. See Setup Wizard page 'Input Function Assignments' for input mapping options.
C2-34	Analog_In_21	---	3 Step Enable Switch / TPS2A	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See 3StepSwitch 1-axis table for setup.
C2-35	Analog_In_22	---	USB Logging Activate	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See USBLoggingRequestIn channel for input state. See Setup Wizard page 'USB Logging' for configuration options.
C2-36	Analog_In_23	---	Charge Out Pressure / TPS2B	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See ChargeOutPress [kPa] channel for input state. See Setup Wizard page 'Charge Out Pressure' for calibration options.
C2-37	Digital_In_6	---	Spare Digital Input	No pullup. Will work with TTL signals.	Input can be assigned to different pins. See Setup Wizard page Input Function Assignments for input mapping options.
C2-38	Digital_In_7	---	Brake Switch	No pullup. Will work with TTL signals.	See BrakeSwitch 1-axis table for setup options. Input can be assigned to different pins. See Setup Wizard page 'Input Function Assignments' for input mapping options.
C2-39	Power Ground	---	Ground	Power Ground	Connect directly to battery ground
C2-40	Power Ground	---	Ground	Power Ground	Connect directly to battery ground
C2-41	CanH_Bout	---	CANH	Dedicated High Speed CAN Transceiver	Not used
C2-42	CanL_Bout	---	CANL	Dedicated High Speed CAN Transceiver	Not used

C2-43	LowsideSwitch_8	Ford Racing PCM70 - 7	Starter Motor Control (SMC)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS8_Duty [%]" for activation settings.
C2-44	LowsideSwitch_7	Engine E - 57	Variable Camshaft Timing 22 Solenoid (Driverside Exhaust)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS7_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
C2-45	UEGO 2 VM	Ford Racing PCM50 - 40	UEGO 2 VM	Bosch UEGO Controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C2-46	UEGO 2 UN	Ford Racing PCM50 - 39	UEGO 2 UN		Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
C2-47	UEGO 2 IP	Ford Racing PCM50 - 16	UEGO 2 IP		Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
C2-48	UEGO 2 IA	Ford Racing PCM50 - 28	UEGO 2 IA		Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
C2-49	UEGO 2 HEAT	Ford Racing PCM50 - 35	UEGO 2 HEAT		Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C2-50	+12V_R8C_CPU	---	Battery Perm Power	Dedicated power management CPU	Optional full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65).
C2-51	Coil 7	5P "Coil Driver 2" - 4	Coil on Plug Assembly 7 (COP7G)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-52	Coil 8	5P "Coil Driver 2" - 5	Coil on Plug Assembly 8 (COP8D)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-53	Coil 9	---	Coil 9	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-54	Coil 10	---	Coil 10	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C2-55	HighsideSwitch_2	2P "Highside Fuel Pump" - 1	Fuel Pump	Multi-function pin depending on hardware configuration	See Setup Wizard page 'HighSide Assigment Tables' for configuration options. See 2D lookup table 'HS1_Table' for activation settings. See Setup Wizard page 'User GPOs' for default activation criteria.

C2-56	Not used	---	Not used	Not used	Not used

Ford PCM Pinout

Ford Racing PCM70	Infinity Assignment	Pin Destination	Ford Coyote with FR Control Pack Description	Infinity Hardware Specification	Notes
1	---	---	---	---	---
2	AGND_1	C1-19 and AUX-3	IAT Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
3	---	---	---	---	---
4	---	---	---	---	---
5	---	---	---	---	---
6	---	---	---	---	---
7	LowsideSwitch_8	C2-43	Starter Motor Control (SMC)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS8_Duty [%]" for activation settings.
8	---	---	---	---	---
9	---	---	---	---	---
10		C2-29			
11	---	---	---	---	---
12	---	---	---	---	---
13	---	---	---	---	---
14	---	---	---	---	---
15	---	---	---	---	---
16	---	---	---	---	---
17	---	---	---	---	---
18		C1-17			
19	---	---	---	---	---
20	---	---	---	---	---
21	+12V	C1-61 and Engine E-36	Injector +12V Power	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	---	---	---	---	---
26	---	---	---	---	---
27	---	---	---	---	---

28	Analog_In_18	C2-13	DBW_APP1 [%]	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
29	Analog_In_19	C2-14	DBW_APP2 [%]	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
30	---	---	---	---	---
31	---	---	---	---	---
32	---	---	---	---	---
33	---	---	---	---	---
34	---	---	---	---	---
35	---	---	---	---	---
36	---	---	---	---	---
37	---	---	---	---	---
38		C1-29			
39	---	---	---	---	---
40	---	---	---	---	---
41	---	---	---	---	---
42	+12V_Relay_Control	C1-65	PCM Relay control	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
43	---	---	---	---	---
44	AGND_2	C2-32 and Ford Racing PCM70-60	APP Sensor 1 Ground APPRTN(1)	Dedicated analog ground	Analog 0-5V sensor ground
45	+5V_Out_2	C2-22	APPVREF (1)	Regulated, fused +5V supply for sensor power	Analog sensor power
46	---	---	---	---	---
47	Analog_In_Temp_2	C1-67 and AUX-2	Intake Air Temperature	12 bit A/D, 2.49K pullup to 5V	See 'Air Temperature' Setup Wizard for selection. Caution: Only one Intake Air Temp Sensor can be connected at a time.
48	---	---	---	---	---
49	---	---	---	---	---
50	Power Ground	C2-8	Case Ground	Power Ground	Connect directly to battery ground
51	LowsideSwitch_4	C1-1	Intercooler Pump Relay Control (SCICP PCM signal)	Lowside switch, 4A max, NO internal flyback diode.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS4_Duty [%]" for activation settings.
52	---	---	---	---	---
53	LowsideSwitch_0	C1-34	GENRC	Lowside switch, 4A max, NO internal flyback diode.	See Setup Wizard Page "LowSide Assignment Tables" for output assignment and 2D table "LS0_Duty [%]" for activation.

54	---	---	---	---	---
55	---	---	---	---	---
56	---	---	---	---	---
57	---	---	---	---	---
58	CANL_Aout	C1-31	AEMNet CANL	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
59	CANH_Aout	C1-32	AEMNet CANH	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
60	AGND_2	C2-32 and Ford Racing PCM70-44	APP Sensor 2 Ground APPRTN(2)	Dedicated analog ground	Analog 0-5V sensor ground
61	+5V_Out_2	C2-23	APPVREF (2)	Regulated, fused +5V supply for sensor power	Analog sensor power
62	+12V_R8C_CPU	C1-10 and 2P "Flash Enable" - 1	KAPWR / 12VHAAT	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-65).
63	---	---	---	---	---
64	---	---	---	---	---
65	---	---	---	---	---
66	---	---	---	---	---
67	+12V	C1-64 and AUX-8	+12V In	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal pin C1-29 above.
68	+12V	C2-9	VPWR	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
69	Power Ground	C1-60	PWR Ground	Power Ground	Connect directly to battery ground
70	Power Ground	C1-73	PWR Ground	Power Ground	Connect directly to battery ground

Ford Engine E	Infinity Assignment	Pin Destination	Ford Coyote with FR Control Pack Description	Infinity Hardware Specification	Notes
1	---	---	---	---	---
2	LowsideSwitch_3	C1-18	Variable Camshaft Timing 11 Solenoid (Passengerside Intake)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS3_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
3	---	---	---	---	---
4	---	---	---	---	---
5	---	---	---	---	---

6	AGND_2	C2-31 and Engine E-44	Knock Sensor 1 Ground [KS1 -]	Dedicated analog ground	Analog 0-5V sensor ground
7	Knock Sensor 1	C1-27	Knock Sensor+ [KS1 +]	Dedicated knock signal processor	See Setup Wizard page 'Knock Setup' for options.
8	AGND_2	C2-30	DBW Ground (ETCRTN)	Dedicated analog ground	Analog 0-5V sensor ground
9	+5V_Out_1	C1-41	'Electronic Throttle Control (ETCREF)	Regulated, fused +5V supply for sensor power	Analog sensor power
10	Analog_In_16	C2-21	Throttle Position # Positive Slope (TP2)	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
11	Power Ground	C1-55	Crankshaft Position Sensor Shield (SHDRTN)	Power Ground	Connect directly to battery ground
12	Crankshaft Position Sensor VR-	C1-46	Crankshaft Position Sensor (CKP-)	Differential Variable Reluctance Zero Cross Detection	'See Setup Wizard page 'Cam/Crank' for options.
13	Crankshaft Position Sensor VR+	C1-45	Crankshaft Position (CKP+)	Differential Variable Reluctance Zero Cross Detection	'See Setup Wizard page 'Cam/Crank' for options.
14	---	---	---	---	---
15	---	---	---	---	---
16	LowsideSwitch_5	C1-2	Variable Camshaft Timing 21 Solenoid (Driverside Intake)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS5_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
17	---	---	---	---	---
18	Coil 2	4P "Coil Driver 1" - 2	Coil on Plug Assembly 2 (COP2H)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
19	---	---	---	---	---
20	---	---	---	---	---
21	---	---	---	---	---
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	---	---	---	---	---
26	---	---	---	---	---
27	---	---	---	---	---
28	---	---	---	---	---
29	Camshaft Position Sensor 1 VR-	C1-47	VR Reluctance Sensor (VRSRTN)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
30	Analog_In_Temp_1	C1-66	Cylinder Head Temperature (CHT)	12 bit A/D, 2.49K pullup to 5V	See 'Coolant Temperature' Setup Wizard for selection.

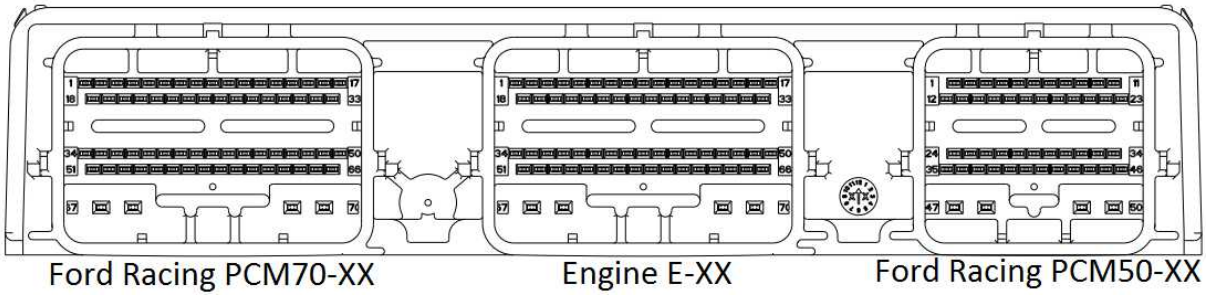
31	---	---	---	---	---
32	AGND_1	C1-20	Digital Cams Ground (E-SIGRTN)	Dedicated analog ground	Analog 0-5V sensor ground
33					
34	Coil 5	4P "Coil Driver 2" - 4	Ignition Coil on Plug Assembly 5 (COP5B)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
35	---	---	---	---	---
36	+12V	C1-61 and Ford Racing PCM70-21	Digital Cam Sensor +12V Power	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-29 above.
37	---	---	---	---	---
38	---	---	---	---	---
39	Analog_In_7	C1-35	DBW Negative Slope (TP1)	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See the Setup Wizard Set Throttle Range page for automatic min/max calibration. Monitor the Throttle [%] channel. Also DB1_TPSA [%] for DBW applications.
40	---	---	---	---	---
41	Camshaft Position Sensor 1 Hall	C1-22	Camshaft Position Bank 1 (Passenger Intake) (CMP11)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Cam/Crank' for options.
42	Digital_In_2	C1-23	Camshaft Position Bank 2 (Driverside Intake) (CMP21)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page 'Cam/Crank' for options.
43	---	---	---	---	---
44	AGND_2	C2-31 and Engine E-6	Knock Sensor 2 Ground [KS2 -]	Dedicated analog ground	Analog 0-5V sensor ground
45	Knock Sensor 2	C1-28	Knock Sensor+ [KS2 +]	Dedicated knock signal processor	See Setup Wizard page 'Knock Setup' for options.
46	Camshaft Position Sensor 1 VR+	C1-48	Camshaft Position Bank 1 In (Passenger side Exhaust) (CMP12)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
47	VR+_In_2	C1-49	Camshaft Position Bank 2 In (Driver side Exhaust) (CMP22)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
48	VR-_In_2	C1-50	Variable Reluctance Sensor (VRSRTN2)	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page 'Cam/Crank' for options.
49	---	---	---	---	---
50	Coil 4	4P "Coil Driver 1" - 1	Ignition Coil On Plug Assembly 4 (COP-D)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.

51	Coil 7	4P "Coil Driver 2" - 1	Ignition Coil on Plug Assembly 7 (COP7G)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
52	Coil 2	4P "Coil Driver 1" - 3	Ignition Coil On Plug Assembly 2 (COP2H)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
53	Injector 1	C1-63	Fuel Injector Driver 1 (INJ1)	Saturated or peak and hold, 3A max continuous	Injector 1
54	Injector 2	C1-62	Fuel Injector Driver 2 (INJ2)	Saturated or peak and hold, 3A max continuous	Injector 2
55	Injector 3	C1-59	Fuel Injector Driver 3 (INJ3)	Saturated or peak and hold, 3A max continuous	Injector 3
56	LowsideSwitch_6	C1-3	Variable Camshaft Timing 12 Solenoid (Passengerside Exhaust)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS6_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
57	LowsideSwitch_7	C2-44	Variable Camshaft Timing 22 Solenoid (Driverside Exhaust)	Lowside switch, 4A max with internal flyback diode. Inductive load should NOT have full time power.	'See Setup Wizard Page "LowSide Assignment Tables" for configuration options. See 2D table "LS7_Duty [%]" for activation settings. See Setup Wizard page 'VVC' for options.
58	---	---	---	---	---
59	---	---	---	---	---
60	---	---	---	---	---
61	---	---	---	---	---
62	Injector 4	C1-58	Fuel Injector Driver 4 (INJ4)	Saturated or peak and hold, 3A max continuous	Injector 4
63	Injector 5	C1-57	Fuel Injector Driver 5 (INJ5)	Saturated or peak and hold, 3A max continuous	Injector 5
64	Injector 6	C1-56	Fuel Injector Driver 6 (INJ6)	Saturated or peak and hold, 3A max continuous	Injector 6
65	Injector 7	C2-4	Fuel Injector Driver 7 (INJ7)	Saturated or peak and hold, 3A max continuous	Injector 7
66	Injector 8	C2-5	Fuel Injector Driver 8 (INJ8)	Saturated or peak and hold, 3A max continuous	Injector 8
67	DBW1 Motor -	C1-53	Throttle Actuator Control Motor (TACM-)	5.0A max Throttle Control Hbridge Drive	+12V to close
68	DBW1 Motor +	C1-54	Throttle Actuator Control Motor (TACM+)	5.0A max Throttle Control Hbridge Drive	+12V to open
69	Coil 6	4P "Coil Driver 2" - 3	Ignition Coil on Plug Assembly 6 (COP6E)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
70	Coil 1	4P "Coil Driver 1" - 4	Ignition Coil on Plug Assembly 1 (COP1A)	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.

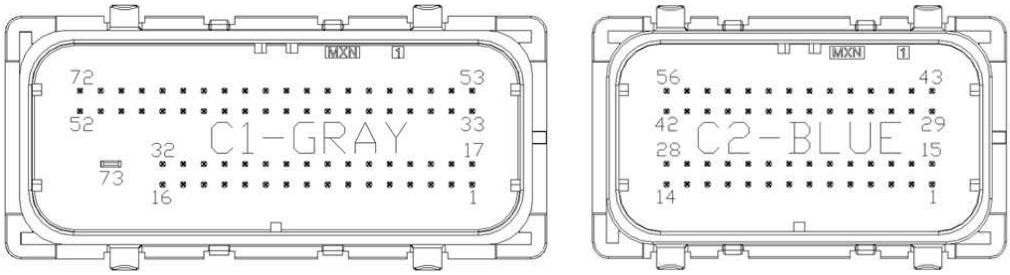
Ford Racing PCM50	Infinity Assignment	Pin Destination	Ford Coyote with FR Control Pack Description	Infinity Hardware Specification	Notes
1	---	---	---	---	---
2	---	---	---	---	---
3	---	---	---	---	---
4	UEGO 1 UN	C1-7	UEGO 1 UN	Bosch UEGO controller	Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
5	---	---	---	---	---
6	---	---	---	---	---
7	---	---	---	---	---
8	---	---	---	---	---
9	---	---	---	---	---
10	---	---	---	---	---
11	---	---	---	---	---
12	---	---	---	---	---
13	---	---	---	---	---
14	---	---	---	---	---
15	UEGO 1 VM	C1-8	UEGO 1 VM	Bosch UEGO controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
16	UEGO 2 IP	C2-47	UEGO 2 IP	Bosch UEGO controller	Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
17	UEGO 1 IP	C1-6	UEGO 1 IP	Bosch UEGO controller	Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
18	---	---	---	---	---
19	Analog_In_20	C2-33	Clutch Position (Neutral Switch) Blunt Lead	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. 'See ClutchSwitch 1-axis table for setup options. Input can be assigned to different pins. See Setup Wizard page 'Input Function Assignments' for input mapping options.
20	---	---	---	---	---
21	---	---	---	---	---
22	---	---	---	---	---
23	---	---	---	---	---
24	UEGO 1 Heat	C1-4	UEGO 1 Heat	Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
25	---	---	---	---	---
26	---	---	---	---	---
27	---	---	---	---	---
28	UEGO 2 IA	C2-48	UEGO 2 IA	Bosch UEGO controller	Trim Current signal. Connect to pin 2 of Bosch UEGO sensor

29	UEGO 1 IA	C1-5	UEGO 1 IA	Bosch UEGO controller	Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
30	---	---	---	---	---
31	---	---	---	---	---
32	---	---	---	---	---
33	---	---	---	---	---
34	---	---	---	---	---
35	UEGO 2 HEAT	C2-49	UEGO 2 HEAT	Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
36	---	---	---	---	---
37	---	---	---	---	---
38	---	---	---	---	---
39	UEGO 2 UN	C2-46	UEGO 2 UN	Bosch UEGO controller	Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
40	UEGO 2 VM	C2-45	UEGO 2 VM	Bosch UEGO controller	Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
41	---	---	---	---	---
42	---	---	---	---	---
43	---	---	---	---	---
44	---	---	---	---	---
45	---	---	---	---	---
46	---	---	---	---	---
47	---	---	---	---	---
48	---	---	---	---	---
49	---	---	---	---	---
50	---	---	---	---	---

Ford Pin Numbering



Infinity Pin Numbering



AUX Connector Pinout

Deutsch Pin	Infinity Pin	Pin Name	Default Pin Function
1	C1-37	Analog_In_9	Fuel Pressure
2	C1-67	Analog_In_Temp_2	Intake Air Temperature *MAF sensor connector must be disconnected if using this input.
3	C1-19	AGND	Sensor Ground
4	C1-42	+5V_OUT	Sensor +5V
5	C1-36	Analog_In_8	MAP Sensor
6	C1-26	Digital_In_5	Flex Fuel
7	C1-33	LowsideSwitch_1	Boost Control
8	C1-64	+12V	+12V
9	C1-43	HighsideSwitch_1	Available 12V Switched Output
10	C2-12	Analog_In_17	Mode Switch
11	C2-18	Analog_In_13	Oil Pressure
12	C2-19	Analog_In_14	TC Slip Target Trim

Misc Pinouts

5P "Coil Driver 1"		
Pin	Dest. Pin	Default Pin Function
1	C1-14	Coil 1
2	C1-13	Coil 2
3	Ring Term.	Ground
4	C1-12	Coil 3
5	C1-11	Coil 4

5P "Coil Driver 2"		
Pin	Dest. Pin	Default Pin Function
1	C1-16	Coil 5
2	C1-15	Coil 6
3	Ring Term.	Ground
4	C1-51	Coil 7
5	C1-52	Coil 8

4P "Coil Driver 1"		
Pin	Dest. Pin	Default Pin Function
1	E-50	Coil 4
2	E-18	Coil 3
3	E-52	Coil 2
4	E-70	Coil 1

4P "Coil Driver 2"		
Pin	Dest. Pin	Default Pin Function
1	E-51	Coil 8
2	E-33	Coil 7
3	E-69	Coil 6
4	E-34	Coil 5

2P "Flash"		
Pin	Dest. Pin	Default Pin Function
1	C1-10	+12V Perm Power
2	C1-9	Flash Enable

2P "Fuel Pump"		
Pin	Dest. Pin	Default Pin Function
1	C2-55	HighsideSwitch_2 *Optional Fuel Pump Control
2	---	---

12 MONTH LIMITED WARRANTY

Advanced Engine Management Inc. warrants to the consumer that all AEM High Performance products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced at AEM's option, when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM within 30 days of the date the RMA is issued.

Please note that before AEM can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the EMS tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RMA requested before the above process transpires.

AEM will not be responsible for electronic products that are installed incorrectly, installed in a non-approved application, misused, or tampered with.

Any AEM electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of $50.00 for inspection and diagnosis of AEM electronic parts. Parts used in the repair of AEM electronic components will be extra. AEM will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product.